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10/500,162	06/25/2004	Magalie Genet	0501-1097	7425

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EXAMINER

RAMIREZ, JOHN FERNANDO

ART UNIT	PAPER NUMBER
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3737

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/500,162	Applicant(s) GENET ET AL.	
	Examiner John F. Ramirez	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

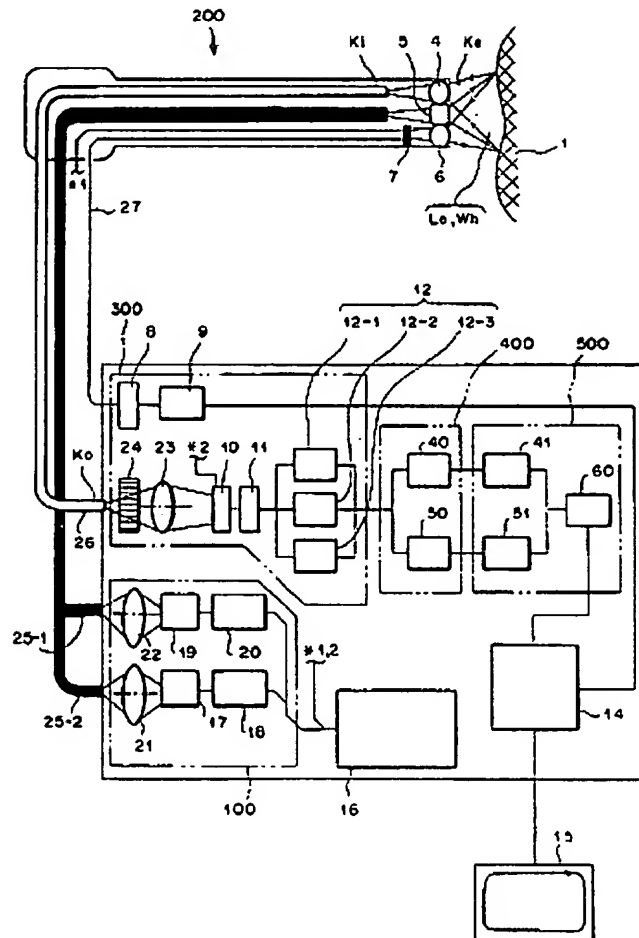
A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
- (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-3, are rejected under 35 U.S.C. 102(e) as being anticipated by Tsujita (US 6,516,217).

F I G . 1



Tsujita shows in figures 1 and 2 an equipment for spectroscopic analysis of autofluorescence of a biological tissue (1) comprising an excitation source (17), a bundle constituted by a single optical fiber or a plurality of flexible optical fibers (25, 26) and means for injecting an excitation signal produced by said source into said bundle according to a useful diameter corresponding to the excitation of the single fiber, all the optical fibers in the bundle or a specific subgroup, and a means for analyzing an emitted autofluorescence signal (fig. 2), characterized in that it comprises at said bundle output an optical head (200, fig. 1) intended to be placed in contact with the biological tissue (1), said optical head

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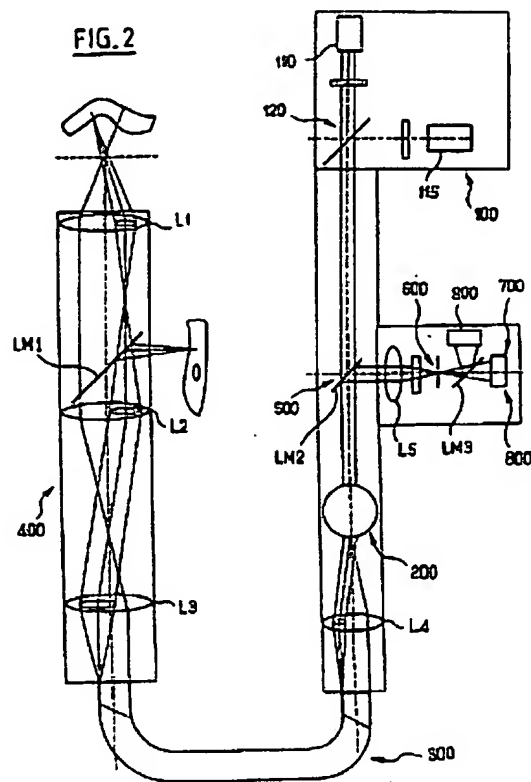
being equipped with optical means (4, 5, 6, fig. 1) adapted for converging the excitation signal coming out of said bundle (col. 4, lines 45-46) into a subsurface analysis zone (1), the same optical fiber or fibers of said bundle having served for carrying the excitation signal being used for detecting the signal emitted by said subsurface analysis zone, means (D) placed upstream of the means for injecting being moreover provided for separating the excitation signal wavelength and the autofluorescence signal wavelength, characterized in that the optical means of the optical head comprise a system of lenses forming a focusing objective (col. 4, lines 60-67) adapted for transcribing the spatial distribution of the focal spot (PSF) at the fiber bundle output and the quality of the wave front (WFE) and for minimizing the parasitic reflection occurring at the fiber bundle output, characterized in that the optical head comprises a glass plate intended to come into contact with the biological tissue (col. 3, line 62 – col. 4, line 44) to be analyzed and adapted producing an index adaptation with said tissue.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujita (US 6,516,217) in view of Le Gargasson et al. (US 6,470,124).



Tsujita teaches all the limitations of the claimed subject matter except for mentioning specifically a system for spectroscopy analysis characterized in that comprises a glass plate placed at the output of the optical fiber bundle and shared with the optical head, said plate being sufficiently thick to reject the parasitic parallel reflections at the output said fiber bundle, characterized in that the means for injecting into the optical fiber bundle has a wave front quality and a spatial distribution of the focal spot intensity adapted to the useful diameter of the fiber bundle, characterized in that the excitation source emits at a wavelength adapted to excite chosen endogenous fluorophores present biological tissues of the observed site, characterized in that the means for separating the wavelengths is a dichroic plate, characterized in that the means for spectroscopic

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analysis comprise a spectrograph and a means of coupling to the slit of the spectrograph, characterized in that the means for coupling to the slit of the spectrograph comprises an achromatic optical means, characterized by means for rejecting placed upstream of the coupling means and adapted for eliminating the backscattered excitation wavelength, characterized by a lens placed upstream of the means for rejecting adapted for improving the signal-to-noise ratio, characterized in that comprises a means for adapting the size of the beam emitted by the excitation source to the useful diameter of the optical fiber bundle, characterized that it moreover comprises means for jointly producing a confocal image of the analysis zone, comprising: an illumination source, a detector of the return signal for analysis, a means for separating the illumination signal and said return signal, means for coupling the excitation beam for the spectroscopic analysis and the illumination beam for the confocal imaging, before introduction into the means for injecting into the optical fiber bundle, a means for rapid scanning one by one of the fibers situated upstream of the means for injecting into the fiber bundle and a system for spatial filtering at the input to the signal detector adapted for selecting the return signal originating from the fiber illuminated, the means for injecting into the fiber bundle having spatial distribution the focal spot intensity equal to the diameter of a fiber core, each fiber being illuminated alternately and in an addressed manner, characterized in that the means for coupling are placed upstream of the scanning means, characterized in that the illumination source pulsed laser diode, characterized that the illumination source has a wave front quality of the order of $\lambda/8$, characterized that

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the detector of the return signal is an avalanche photodiode, characterized in that the means for coupling the excitation signal for the spectroscopic analysis and the illumination signal for the confocal imaging, comprise a dichroic plate, characterized in that the means for rapid scanning of the fibers one by one comprises a mirror resonating at a given frequency and a galvanometric mirror with a variable frequency, and two optical systems each constituted by lenses first adapted for conjugating the two mirrors then the galvanometric mirror and the fiber bundle input, characterized in that the spatial filtering system comprises a filtering hole size of which is such that it corresponds to the diameter of a fiber core, taking into account the magnification of the optical system, between the fiber bundle input and the filtering hole.

However, a system for spectroscopy analysis characterized in that comprises a glass plate placed at the output of the optical fiber bundle and shared with the optical head, said plate being sufficiently thick to reject the parasitic parallel reflections at the output said fiber bundle, characterized in that the means for injecting into the optical fiber bundle has a wave front quality and a spatial distribution of the focal spot intensity adapted to the useful diameter of the fiber bundle, characterized in that the excitation source emits at a wavelength adapted to excite chosen endogenous fluorophores present biological tissues of the observed site, characterized in that the means for separating the wavelengths is a dichroic plate, characterized in that the means for spectroscopic analysis comprise a spectrograph and a means of coupling to the slit of the spectrograph, characterized in that the means for coupling to the slit of the

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spectrograph comprises an achromatic optical means, characterized by means for rejecting placed upstream of the coupling means and adapted for eliminating the backscattered excitation wavelength, characterized by a lens placed upstream of the means for rejecting adapted for improving the signal-to-noise ratio, characterized in that comprises a means for adapting the size of the beam emitted by the excitation source to the useful diameter of the optical fiber bundle, characterized that it moreover comprises means for jointly producing a confocal image of the analysis zone, comprising: an illumination source, a detector of the return signal for analysis, a means for separating the illumination signal and said return signal, means for coupling the excitation beam for the spectroscopic analysis and the illumination beam for the confocal imaging, before introduction into the means for injecting into the optical fiber bundle, a means for rapid scanning one by one of the fibers situated upstream of the means for injecting into the fiber bundle and a system for spatial filtering at the input to the signal detector adapted for selecting the return signal originating from the fiber illuminated, the means for injecting into the fiber bundle having spatial distribution the focal spot intensity equal to the diameter of a fiber core, each fiber being illuminated alternately and in an addressed manner, characterized in that the means for coupling are placed upstream of the scanning means, characterized in that the illumination source pulsed laser diode, characterized that the illumination source has a wave front quality of the order of $\lambda/8$, characterized that the detector of the return signal is an avalanche photodiode, characterized in that the means for coupling the excitation signal for the spectroscopic analysis and

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the illumination signal for the confocal imaging, comprise a dichroic plate, characterized in that the means for rapid scanning of the fibers one by one comprises a mirror resonating at a given frequency and a galvanometric mirror with a variable frequency, and two optical systems each constituted by lenses first adapted for conjugating the two mirrors then the galvanometric mirror and the fiber bundle input, characterized in that the spatial filtering system comprises a filtering hole size of which is such that it corresponds to the diameter of a fiber core, taking into account the magnification of the optical system, between the fiber bundle input and the filtering hole are considered conventional in the art as evidenced by the teachings of Le Gargasson et al. (US 6,470,124) in figures 1 and 2.

The Le Gargasson et al. patent teaches a system for spectroscopy analysis characterized in that comprises a glass plate placed at the output of the optical fiber bundle and shared with the optical head, said plate being sufficiently thick to reject the parasitic parallel reflections at the output said fiber bundle, characterized in that the means for injecting into the optical fiber bundle has a wave front quality and a spatial distribution of the focal spot intensity adapted to the useful diameter of the fiber bundle, characterized in that the excitation source emits at a wavelength adapted to excite chosen endogenous fluorophores present biological tissues of the observed site, characterized in that the means for separating the wavelengths is a dichroic plate, characterized in that the means for spectroscopic analysis comprise a spectrograph and a means of coupling to the slit of the spectrograph, characterized in that the means for

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coupling to the slit of the spectrograph comprises an achromatic optical means, characterized by means for rejecting placed upstream of the coupling means and adapted for eliminating the backscattered excitation wavelength, characterized by a lens placed upstream of the means for rejecting adapted for improving the signal-to-noise ratio, characterized in that comprises a means for adapting the size of the beam emitted by the excitation source to the useful diameter of the optical fiber bundle, characterized that it moreover comprises means for jointly producing a confocal image of the analysis zone, comprising: an illumination source, a detector of the return signal for analysis, a means for separating the illumination signal and said return signal, means for coupling the excitation beam for the spectroscopic analysis and the illumination beam for the confocal imaging, before introduction into the means for injecting into the optical fiber bundle, a means for rapid scanning one by one of the fibers situated upstream of the means for injecting into the fiber bundle and a system for spatial filtering at the input to the signal detector adapted for selecting the return signal originating from the fiber illuminated, the means for injecting into the fiber bundle having spatial distribution the focal spot intensity equal to the diameter of a fiber core, each fiber being illuminated alternately and in an addressed manner, characterized in that the means for coupling are placed upstream of the scanning means, characterized in that the illumination source pulsed laser diode, characterized that the illumination source has a wave front quality of the order of $\lambda/8$, characterized that the detector of the return signal is an avalanche photodiode, characterized in that the means for coupling the excitation signal for the

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spectroscopic analysis and the illumination signal for the confocal imaging, comprise a dichroic plate, characterized in that the means for rapid scanning of the fibers one by one comprises a mirror resonating at a given frequency and a galvanometric mirror with a variable frequency, and two optical systems each constituted by lenses first adapted for conjugating the two mirrors then the galvanometric mirror and the fiber bundle input, characterized in that the spatial filtering system comprises a filtering hole size of which is such that it corresponds to the diameter of a fiber core, taking into account the magnification of the optical system, between the fiber bundle input and the filtering hole.

Based on the above observations, for a person of ordinary skill in the art, modifying the system disclosed by Tsujita, with the above discussed enhancements would have been considered obvious because such modifications would have enhanced the capabilities of the system, resulting in better depth resolution and image contrast.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Ramirez whose telephone number is (571) 272-8685. The examiner can normally be reached on (Mon-Fri) 7:30 - 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The

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fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JFR
12/27/05


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